



Institute of Paper Science and Technology

BASE-LINE
2nd HALF, 1990

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR JUL-AUG, SEPT-OCT, NOV-DEC, 1990)

A Progress Report

to

THE CONTAINERBOARD & KRAFT PAPER GROUP

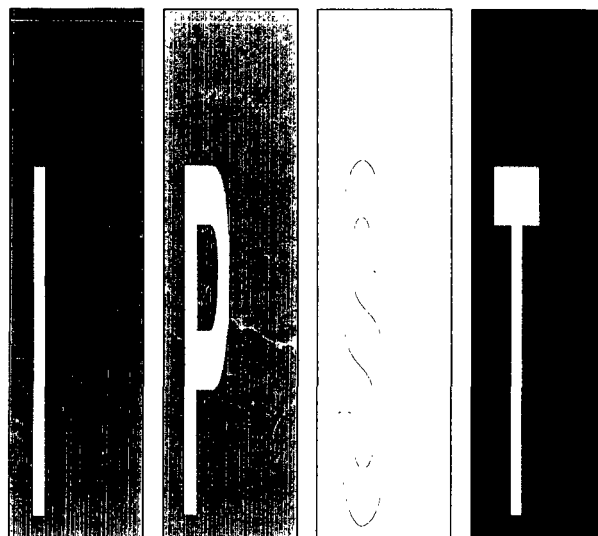
OF THE

AMERICAN PAPER INSTITUTE

Project 2694-2

Report Seventy-Two

March 1, 1990



Atlanta, Georgia

BASE-LINE
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THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY
Atlanta, Georgia

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THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY
Atlanta, Georgia

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR JULY-AUG, SEPT-OCT, NOV-DEC, 1990)

SUMMARY

MOISTURE CONTENT, %

Medium Grade Wt.		JUL-AUG			SEPT-OCT			NOV-DEC		
		Total	Recycled		Total	Recycled		Total	Recycled	
26 Lb.	Max.	9.5	9.2		9.5	8.9		9.6	9.0	
	Min.	5.6	5.6		5.7	5.7		5.6	5.6	
	Ave.	7.4	(28)	7.1 (10)	7.3	(27)	7.0 (9)	7.3	(24)	7.1 (9)
33 Lb.	Max.	9.7	8.6		9.5	8.6		9.5	8.7	
	Min.	5.8	5.8		5.8	5.8		5.5	5.5	
	Ave.	7.6	(21)	7.4 (6)	7.6	(21)	7.3 (5)	7.5	(20)	7.3 (5)

BASIS WEIGHT

		JUL-AUG			SEPT-OCT			NOV-DEC		
		Total	Recycled		Total	Recycled		Total	Recycled	
26 Lb.	Max.	27.6	27.6		26.9	26.9		27.3	27.3	
	Min.	25.4	25.4		25.5	25.7		25.5	25.8	
	Ave.	26.2	(31)	26.5 (12)	26.4	(30)	26.4 (11)	26.3	(27)	26.5 (11)
33 Lb.	Max.	33.8	33.8		33.8	33.8		33.9	33.9	
	Min.	32.2	32.9		32.5	32.7		32.3	33.0	
	Ave.	33.1	(23)	33.2 (7)	33.0	(23)	33.3 (6)	33.1	(22)	33.3 (6)

CALIPER

		JUL-AUG			SEPT-OCT			NOV-DEC		
		Total	Recycled		Total	Recycled		Total	Recycled	
26 Lb.	Max.	11.1	11.0		11.4	11.0		11.5	10.9	
	Min.	7.4	8.6		7.4	8.6		8.3	8.7	
	Ave.	9.5	(28)	9.7 (11)	9.6	(28)	9.6 (11)	9.5	(25)	9.6 (11)
33 Lb.	Max.	13.1	12.3		13.7	12.1		14.0	12.0	
	Min.	10.4	10.4		9.3	10.6		10.2	10.4	
	Ave.	11.5	(21)	11.1 (6)	11.5	(22)	11.0 (6)	11.6	(21)	11.0 (6)

Max. and Min. values are current machine averages.

Ave. is current C.K.P.G. average, number of machines is indicated in parentheses.

SUMMARY (cont.)

CONCORA

Medium Grade Wt.		JUL-AUG				SEPT-OCT				NOV-DEC			
		Total	Recycled			Total	Recycled			Total	Recycled		
26 Lb.	Max.	70.0	62.8			77.0	63.9			69.0	63.5		
	Min.	58.0	58.0			56.0	58.1			58.0	58.0		
	Ave.	61.7	(31)	60.8	(12)	61.8	(30)	60.9	(11)	62.0	(26)	60.8	(10)
33 Lb.	Max.	83.3	81.4			83.7	81.3			83.0	82.1		
	Min.	66.0	69.7			67.0	76.8			67.0	76.1		
	Ave.	75.8	(21)	76.3	(6)	75.7	(21)	78.0	(5)	75.4	(19)	78.9	(4)

C.D. RING CRUSH

		JUL-AUG				SEPT-OCT				NOV-DEC			
		Total	Recycled			Total	Recycled			Total	Recycled		
26 Lb.	Max.	43.0	33.0			43.0	34.0			42.0	33.0		
	Min.	22.7	22.7			23.4	23.4			22.2	22.2		
	Ave.	31.7	(17)	27.1	(6)	32.5	(17)	29.1	(5)	32.4	(16)	28.0	(6)
33 Lb.	Max.	63.0	61.1			65.0	60.7			66.0	62.0		
	Min.	35.4	35.4			33.7	33.7			35.8	35.8		
	Ave.	53.5	(16)	48.8	(5)	53.0	(16)	48.2	(5)	53.9	(16)	49.6	(5)

STFI

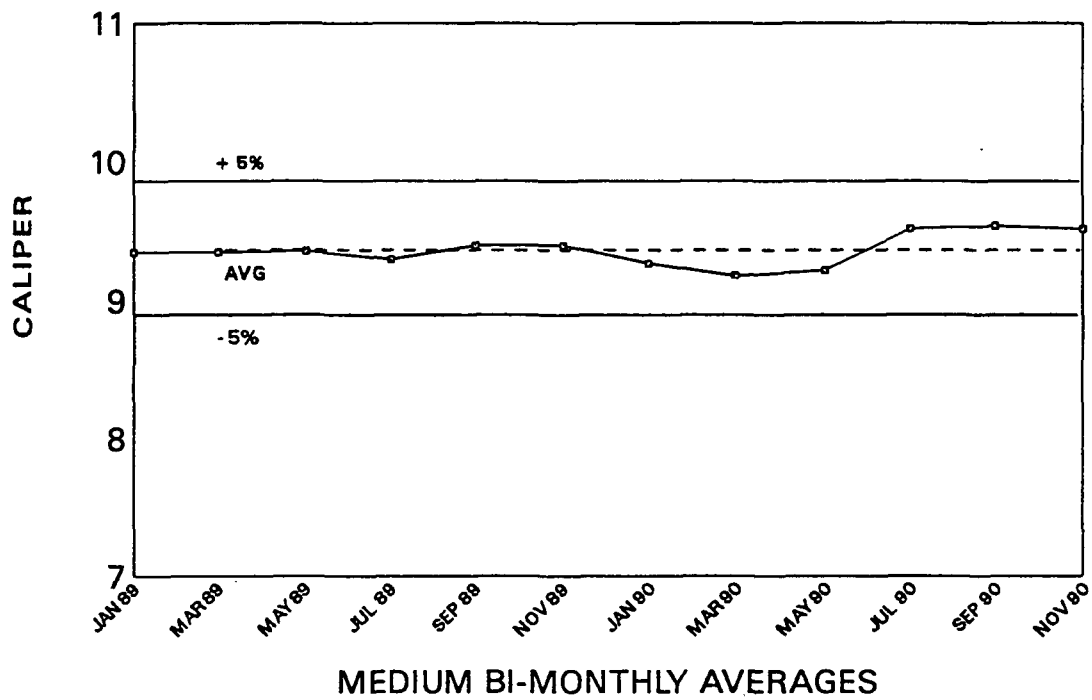
		JUL-AUG				SEPT-OCT				NOV-DEC			
		Total	Recycled			Total	Recycled			Total	Recycled		
26 Lb.	Max.	17.1	13.1			16.2	13.6			14.0	13.5		
	Min.	10.4	12.1			10.5	13.2			10.1	12.0		
	Ave.	12.7	(16)	12.6	(2)	13.1	(16)	13.4	(2)	12.4	(11)	12.7	(2)
33 Lb.	Max.	19.5	17.0			19.4	16.6			19.5	16.6		
	Min.	13.7	17.0			13.8	16.6			13.8	16.6		
	Ave.	16.7	(13)	17.0	(1)	16.8	(13)	16.6	(1)	16.7	(12)	16.6	(1)

Max. and Min. values are current machine averages.

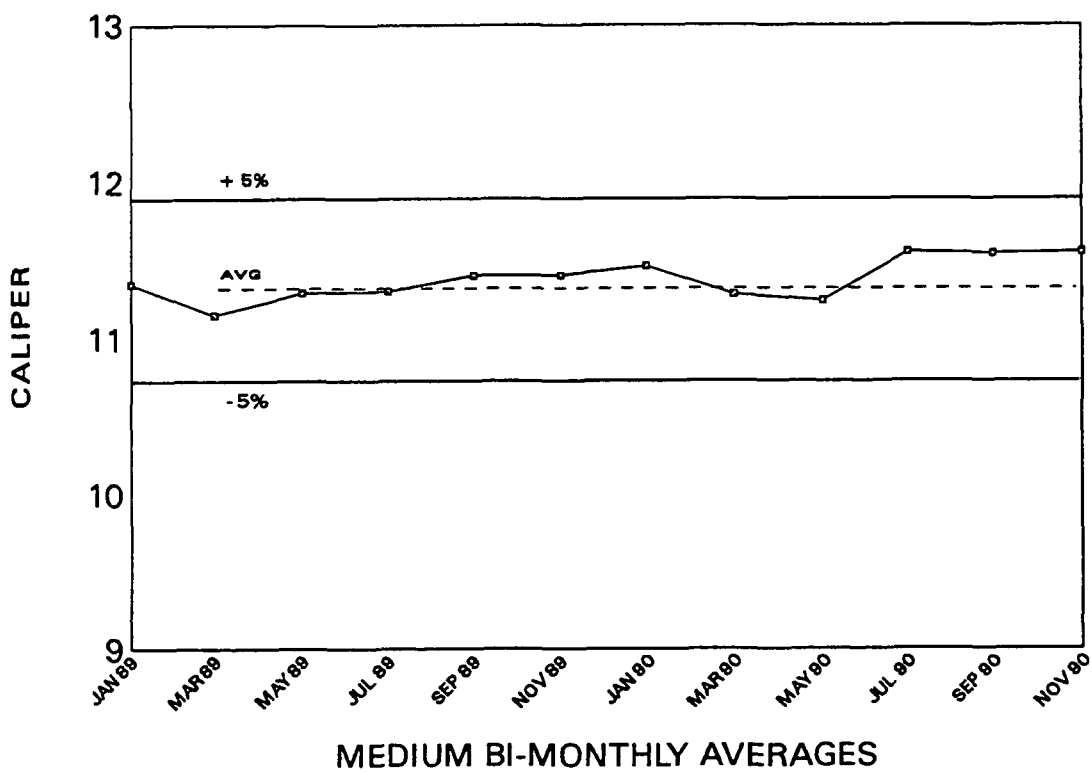
Ave. is current C.K.P.G. average, number of machines is indicated in parentheses.

2 YEAR TREND PLOT FOR CALIPER

• 26 LB

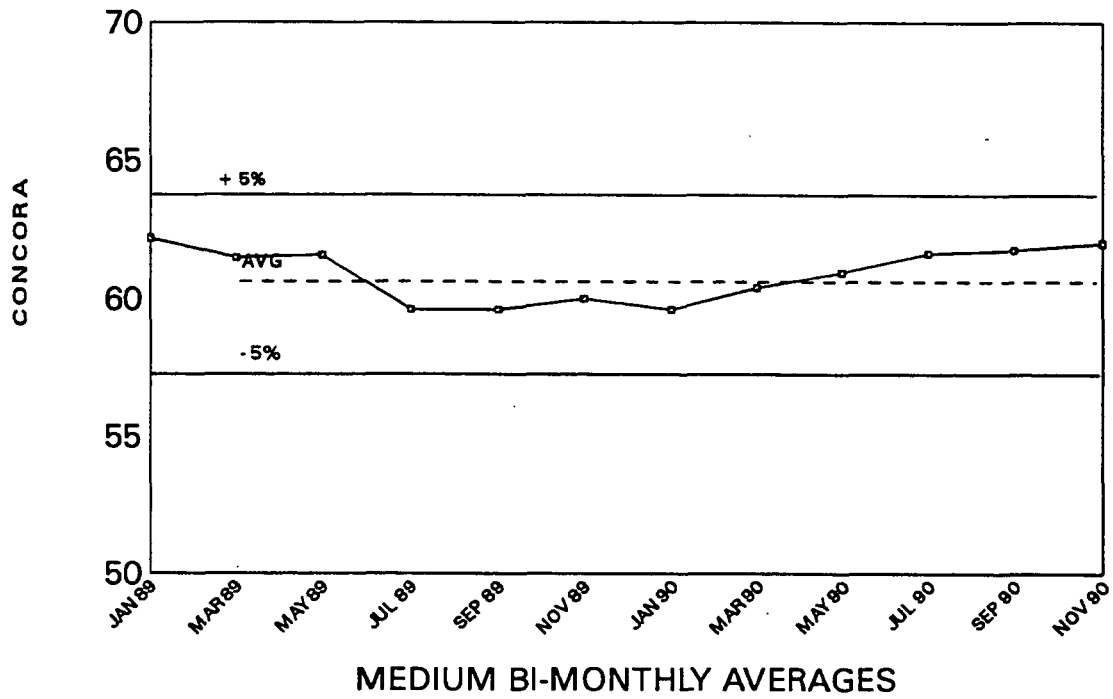


• 33 LB

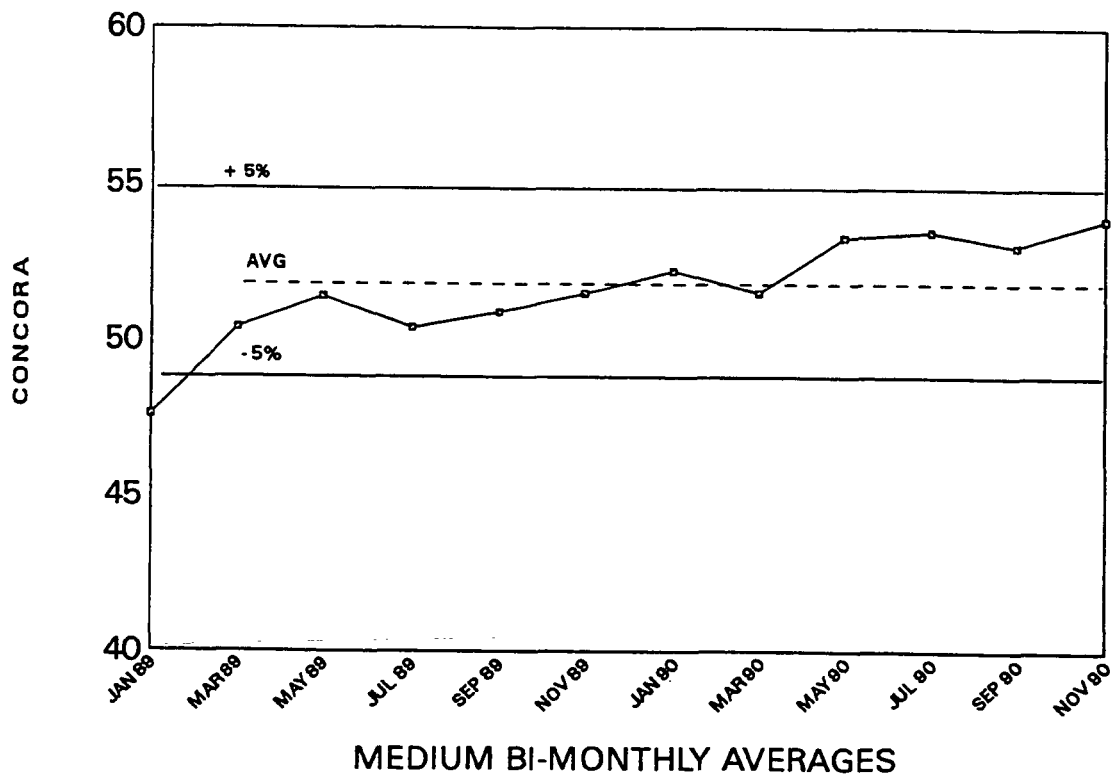


2 YEAR TREND PLOT FOR CONCORRA

- 26 LB

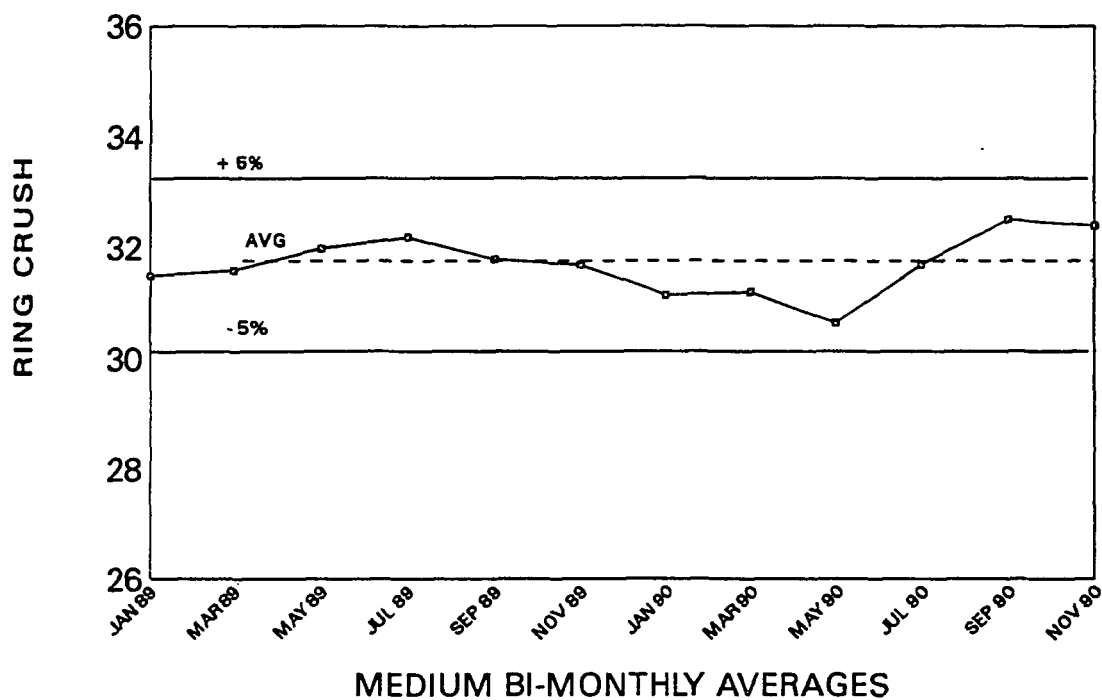


- 33 LB

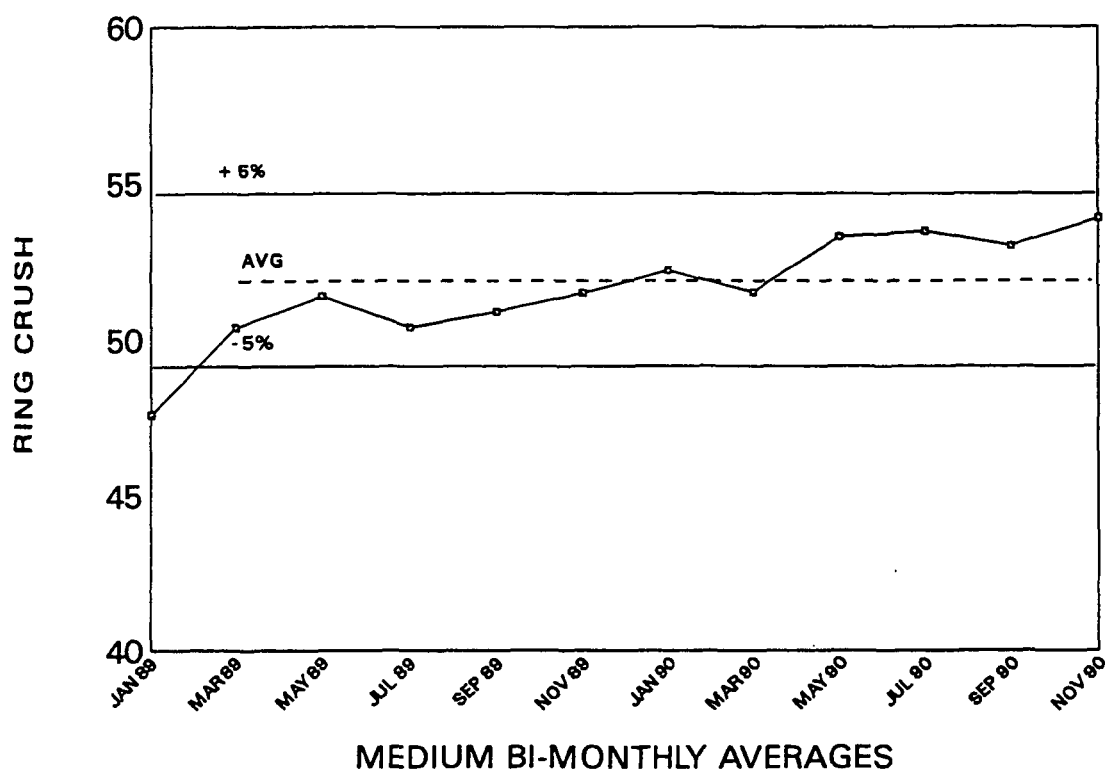


2 YEAR TREND PLOT FOR RING CRUSH

- 26 LB

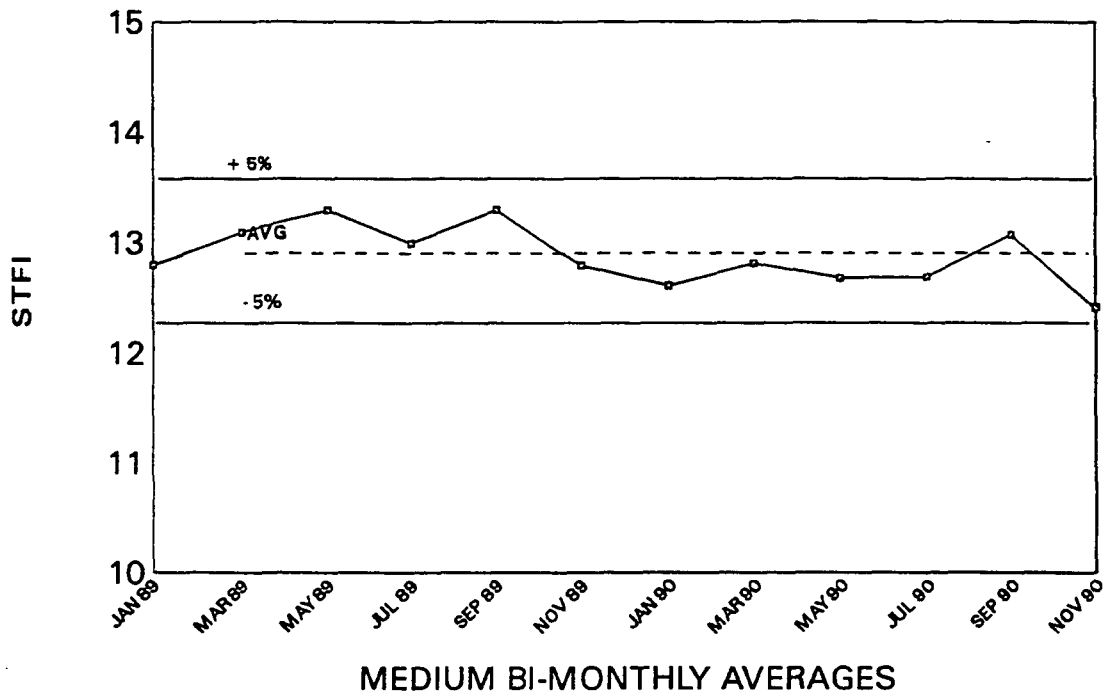


- 33 LB

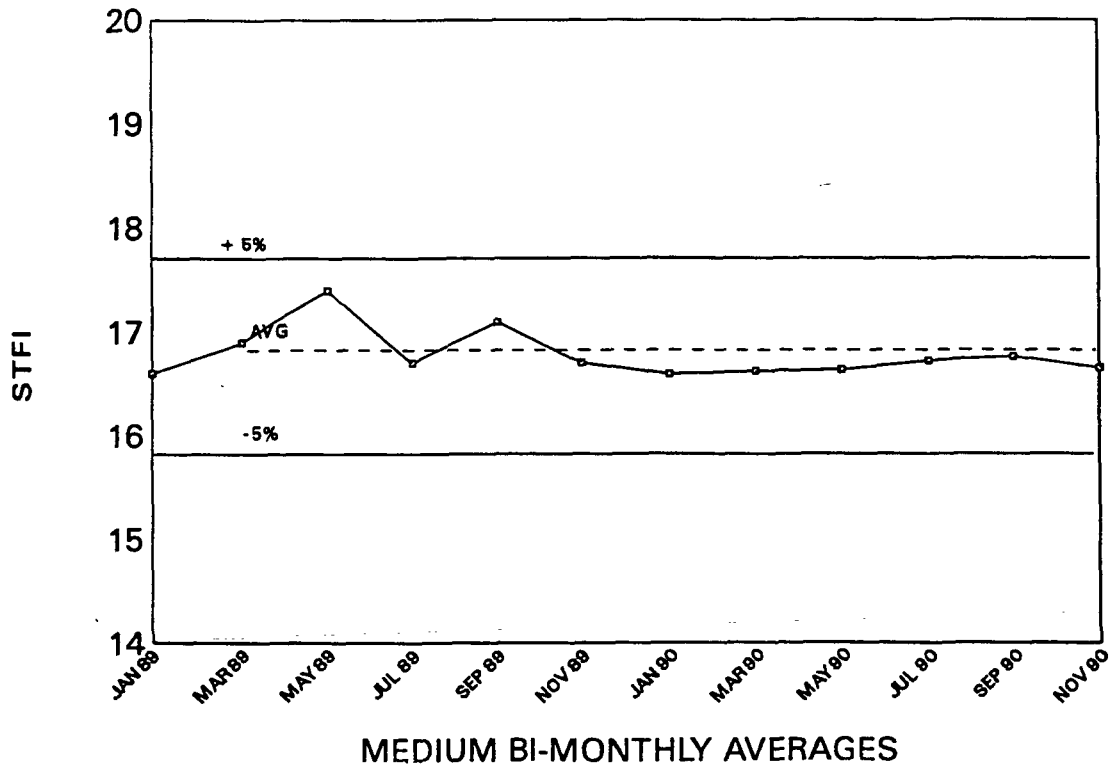


2 YEAR TREND PLOT FOR STFI

26 LB



33 LB



INTRODUCTION

The continuous base-line study (modified) is a compilation of bimonthly averages of mill test data obtained routinely on 26-lb and 33-lb corrugating medium manufactured in the member mills of C.K.P.G. Mill data are included for moisture content, basis weight, caliper, Concora, C.D. ring crush, and C.D. STFI tests made on the production of individual machines which produced at least 500 tons of one of two major grade weights during a given period.

Participating mills are asked to report reel moisture content, basis weight, and moisture content corresponding to the basis weight measurement. The latter two measurements are used to compute the adjusted basis weight corresponding to a moisture content of 7.8%. Only the reel moisture content and the adjusted basis weight are included in the report.

PRESENTATION OF DATA

For the two major grade weights of corrugating Medium referred to earlier, data on conditioning and testing environments, mill test averages for moisture content, adjusted basis weight, caliper, Concora, C.D. ring crush, and C.D. STFI are compiled in the following tables.

Table Number	Description
I-II-III	Mill Test Averages on 26-lb Corrugating Medium
IV-V-VI	Mill Test Averages on 33-lb Corrugating Medium
VII	Data on Conditioning and Testing Environments

The procedure used in calculating cumulative machine averages, machine indexes, and C.K.P.G. indexes are described in the appendix.

In the tables, an (R) following a company code indicates a medium manufactured from recycled fibers.

Table I

Averages of Mill Quality Data for JUL-AUG, 1990

26 LB Corrugating Medium

Code	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq. Ft.			Caliper Mils		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	9.5	9.4	131.6	25.4	25.5	96.9	9.0	9.3	97.1
Y1 (R)				27.6	26.6	105.2	10.6	9.0	114.3
J3	7.0	7.0	97.0	26.0	26.0	99.2	9.9	9.7	106.8
D3 (R)	8.6	7.4	119.1	26.3	26.0	100.3	10.9	10.8	117.5
S2 (R)	8.5	8.2	117.7	26.5	26.4	100.9	8.6	8.3	92.7
M4	6.6	6.5	91.4	26.5	26.8	101.0	8.9	8.9	96.0
Y2 (R)				26.3	26.4	100.1	8.9	9.1	96.0
M1	7.9	7.2	109.4	26.2	26.2	99.8	9.0	9.2	96.5
E4 (R)	7.8	7.7	107.5	26.0	26.0	99.2			
G2	7.5	7.1	103.9	26.1	26.1	99.4	8.7	8.5	93.8
V3		6.7			26.1			7.9	
N2	6.6	6.7	91.4	26.1	26.1	99.4	7.4	7.8	79.8
H4	7.6	7.6	105.3	26.3	26.2	100.1	8.6	8.3	92.7
N1	7.5	7.5	104.3	26.1	25.4	99.5	10.9	11.0	117.9
L3	8.0	7.9	110.1	26.2	26.0	99.7			
D4	7.2	7.0	99.7	26.3	26.3	100.1			
H1		7.4			26.0				
C1		7.3			26.1				
J2		7.2			26.5				
L1 (R)	6.3	5.9	87.3	26.8	26.6	102.1	11.0	11.0	118.1
U2 (R)	5.9	5.8	81.7	26.8	26.8	102.3	10.6	10.6	114.3
S1	6.0	6.2	83.1	26.6	27.4	101.3	9.3	9.4	100.3
O2	7.8	7.7	108.2	25.9	26.0	98.7	9.6	9.3	103.5
S3	7.8	8.6	107.9	26.0	25.7	99.1	9.2	9.4	99.2
Q3		6.3			26.3			8.6	
F3 (R)	6.9	6.9	95.6	25.8	26.0	98.5	9.5	9.5	102.4
N4	8.0	7.9	110.1	26.3	26.3	100.1	11.1	9.9	119.2
Y3 (R)	6.0	5.9	82.4	26.5	26.6	101.1	9.0	9.0	97.1
C2 (R)	5.6	5.5	76.9	26.7	26.7	101.9	9.1	9.2	98.1
O3	7.5	7.1	103.2	25.9	26.1	98.9	9.5	9.7	102.4
I4 (R)	9.2	9.1	126.8	25.4	25.4	96.7	9.4	9.3	100.8
B3	8.9	8.8	122.6	25.8	25.9	98.4	9.4	9.0	101.4
A3 (R)	6.7	6.5	92.8	26.9	26.9	102.5	9.0	9.0	97.1
P1				26.2	26.4	99.8	8.9	9.0	96.0
W4	7.1		98.4	26.2		99.8	10.0		107.8
Z4	8.1		111.5	26.0		99.0	10.1		108.4
CKPG	7.4	7.2	102.8	26.2	26.2	100.0	9.5	9.3	102.4
(R)	7.1			26.5			9.7		

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for JUL-AUG, 1990

26 LB Corrugating Medium

Code	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb./In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	66.3	65.1	109.2		28.0				
Y1 (R)	61.9	62.8	101.9						
J3	64.0	68.2	105.4	43.0	41.2	134.9	13.0	13.0	101.2
D3 (R)	62.8		103.4	31.0	31.0	97.3			
S2 (R)	62.6	67.1	103.1						
M4	58.2	59.7	95.8	32.7	37.5	102.6	12.7	13.2	98.9
Y2 (R)	60.6	58.2	99.8	28.2	27.5	88.5			
M1	62.4	61.4	102.8	29.5	32.3	92.6	12.5	14.1	97.3
E4 (R)	58.0	44.1	95.5						
G2	66.0	66.5	108.7				12.4	12.5	96.5
V3		64.0						14.8	
N2	70.0	72.0	115.3				17.1	15.2	133.1
H4	59.0	61.2	97.2	36.0	36.0	113.0	14.2	14.3	110.5
N1	64.8	64.7	106.6		44.0		10.4	10.9	81.2
L3	60.5	60.7	99.6	30.5	29.5	95.7	11.4	11.6	88.7
D4	58.0	58.8	95.5	29.0	30.0	91.0	11.6	12.4	90.1
H1		60.5			32.2				
C1		62.2							
J2		61.0			33.3				
L1 (R)	59.5	60.2	97.9						
U2 (R)	59.8	60.7	98.5						
S1	60.8	62.6	100.1						
O2	58.0	54.0	95.5		27.5		13.5	13.1	104.7
S3	59.0	61.3	97.2		31.0		14.0	13.4	108.8
Q3		65.8							
F3 (R)	60.6	37.6	99.8	24.8	25.5	77.7			
N4	62.5	62.9	102.9	35.5	34.9	111.4	11.2	11.2	87.2
Y3 (R)	61.0	60.2	100.4	22.7	22.4	71.2			
C2 (R)	59.4	59.9	97.8	22.9	23.2	71.9			
O3	58.0	59.2	95.5	29.0		91.0	12.3	12.6	95.6
I4 (R)	62.2	58.4	102.4				13.1	12.1	101.6
B3	61.0	62.2	100.4				11.7	11.6	91.1
A3 (R)	61.0	61.4	100.4	33.0	31.8	103.6	12.1	12.6	94.2
P1	62.0	60.0	102.1	39.0	38.8	122.4			
W4	68.0		111.9	38.4		120.4			
Z4	63.9		105.3	33.9		106.4			
CKPG (R)	61.7 60.8	60.7	101.5	31.7 27.1	31.9	99.5	12.7 12.6	12.8	98.8

Note B is given in the appendix.

Table I

Averages of Mill Quality Data for SEPT-OCT 1990

26 LB Corrugating Medium

Code	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq. Ft.			Caliper Mils		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	9.5	9.4	131.5	25.5	25.5	97.3	9.3	9.2	99.6
Y1 (R)				26.5	26.8	101.0	10.0	9.4	107.1
J3	7.1	7.0	98.3	26.0	26.0	99.1	9.8	9.7	104.9
D3 (R)	8.5	7.9	117.6	26.3	26.1	100.4	10.6	10.8	113.5
S2 (R)	8.5	8.3	117.6	26.9	26.4	102.5	8.9	8.4	95.3
M4	6.7	6.6	92.7	26.4	26.7	100.7	8.6	8.9	92.1
Y2 (R)				26.2	26.5	99.8	8.6	9.1	92.1
M1	7.2	7.3	99.6	26.0	26.2	99.1	9.3	9.1	99.6
E4 (R)		7.7			26.0				
G2	7.4	7.2	102.4	26.1	26.1	99.5	8.6	8.6	92.1
V3		6.7			26.1			7.9	
N2	6.3	6.7	87.2	26.1	26.1	99.5	7.4	7.7	79.2
H4	7.5	7.5	103.8	26.2	26.2	99.8	8.6	8.3	92.1
N1	7.5	7.5	103.5	26.1	25.3	99.7	11.1	10.9	118.6
L3	7.9	6.6	109.3	26.2	26.0	100.0			
D4	7.4	7.1	101.7	26.3	26.3	100.2			
H1		7.4			26.0				
C1		7.3			26.1				
J2		7.2			26.5				
L1	7.8	5.9	107.9	26.0	26.7	98.9	9.4	11.1	100.6
U2	7.8	5.8	108.1	26.0	26.8	99.0	9.1	10.6	97.4
S1	5.9	6.2	81.6	26.7	27.5	101.7	9.6	9.4	102.8
O2 (R)	6.1	7.7	84.4	26.7	25.9	101.7	11.0	9.4	117.2
S3 (R)	6.0	8.3	83.0	26.9	25.8	102.4	10.8	9.4	115.1
Q3 (R)		6.3			26.3			8.5	
F3 (R)	6.9	6.9	95.5	25.8	25.9	98.6	9.5	9.5	101.7
N4	8.0	7.9	110.7	26.2	26.3	100.1	11.4	10.1	121.5
Y3 (R)	5.9	5.9	81.6	26.5	26.6	101.2	9.1	9.0	97.4
C2 (R)	5.7	5.5	78.9	26.7	26.7	101.8	9.1	9.2	97.4
O3	7.4	7.2	102.4	26.1	26.1	99.4	9.5	9.7	101.7
I4 (R)	8.9	9.1	123.2	25.7	25.4	97.9	9.5	9.3	101.7
B3	8.6	8.8	118.6	25.7	25.9	97.9	9.1	9.1	97.4
A3 (R)	6.6	6.6	91.3	26.6	26.9	101.3	9.1	9.0	97.4
P1				26.2	26.3	99.9	8.8	9.0	94.2
W4	7.2	7.1	99.1	26.2	26.2	99.8	10.3	10.0	110.4
Z4	8.0	8.1	110.8	25.8	26.0	98.3	10.1	10.1	108.1
CKPG	7.3	7.2	101.6	26.2	26.2	99.9	9.5	9.3	101.7
(R)	7.0			26.4			9.6		

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for SEPT-OCT 1990

26 LB Corrugating Medium

Code	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb./In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	66.6	65.6	108.8		26.6				
Y1 (R)	63.9	62.7	104.3						
J3	64.0	67.3	104.5	43.0	41.7	134.3	15.0	13.0	117.0
D3 (R)	63.4	62.8	103.5	34.0	31.3	106.2			
S2 (R)	60.8	66.3	99.3						
M4	56.0	59.4	91.4	37.8	36.7	118.1	12.9	13.1	100.6
Y2 (R)	61.1	58.7	99.8	31.5	27.4	98.4			
M1	60.6	61.6	99.0	32.0	31.3	99.9	13.0	13.8	101.4
E4 (R)		47.6							
G2	66.0	66.5	107.8				12.0	12.5	93.6
V3		64.0						14.8	
N2	77.0	71.8	125.7				16.2	15.5	126.4
H4	58.0	60.8	94.7	37.0	36.0	115.6	14.4	14.3	112.4
N1	67.9	64.3	110.9		45.4			10.8	
L3	60.5	60.8	98.8	31.0	30.0	96.8	11.4	11.6	89.1
D4	59.0	58.7	96.3	30.5	29.8	95.3	13.3	12.2	103.4
H1		60.6			32.4				
C1		62.2							
J2		60.6			32.8				
L1	58.0	60.0	94.7				13.6		106.3
U2	60.0	60.5	98.0				14.1		109.9
S1	61.2	61.8	99.9						
O2 (R)	59.9	54.2	97.7		27.5			13.1	
S3 (R)	60.4	60.4	98.6		29.7		13.6	13.6	106.1
Q3 (R)		65.9							
F3 (R)	61.5	43.3	100.4	24.6	25.5	76.8			
N4	61.0	62.8	99.6	34.0	34.8	106.2	10.5	11.1	81.5
Y3 (R)	59.8	60.4	97.6	23.4	22.5	73.1			
C2 (R)	59.5	59.8	97.2	23.6	23.1	73.7			
O3	58.5	58.9	95.5	30.0	29.0	93.7	12.0	12.5	93.6
I4 (R)	58.1	58.9	94.9				13.2	12.1	103.0
B3	63.0	62.0	102.9				12.2	11.6	95.2
A3 (R)	61.4	61.5	100.3	32.9	31.9	102.7	12.0	12.6	93.2
P1	61.0	60.3	99.6	35.0	38.8	109.3			
W4	65.1	68.0	106.3	38.2	38.4	119.2			
Z4	60.6	63.9	98.9	34.5	33.9	107.7			
CKPG (R)	61.8 60.9	61.2	100.9	32.5 29.1	32.0	101.6	13.1 13.4	12.8	102.1

Note B is given in the appendix.

Table I

Averages of Mill Quality Data for NOV-DEC, 1990

26 LB Corrugating Medium

Code	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq. Ft.			Caliper Mils		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	9.6	9.4	131.8	25.5	25.5	97.2	9.4	9.2	100.5
Y1 (R)				26.4	26.8	100.7	9.8	9.6	104.8
J3	7.2	7.0	98.8	26.1	26.0	99.4	9.9	9.7	105.8
D3 (R)	8.5	8.4	116.7	26.2	26.3	100.0	10.4	10.7	111.2
S2 (R)	8.6	8.4	118.0	27.3	26.5	104.1	9.0	8.4	96.2
M4	6.5	6.6	89.2	26.4	26.6	100.6	8.3	8.9	88.7
Y2 (R)				25.8	26.3	98.5	8.7	9.0	93.0
M1	7.1	7.4	97.4	26.0	26.2	99.1	9.2	9.2	98.4
E4 (R)		7.7			26.0				
G2	7.4	7.2	101.6	26.1	26.1	99.5	8.5	8.5	90.9
V3		6.7			26.1			7.9	
N2		6.6			26.1			7.6	
H4	7.4	7.5	101.6	26.2	26.2	100.0	8.3	8.3	88.7
N1	7.5	7.5	103.2	26.2	25.3	100.0	11.3	11.0	120.6
L3	7.9	7.9	108.4	26.3	26.1	100.4			
D4	7.4	7.2	100.9	26.2	26.2	100.1			
H1		7.4			26.0				
C1		7.4			26.1				
J2		7.2			26.5				
L1 (R)	6.2	6.3	85.1	26.6	26.5	101.3	10.9	10.7	116.5
U2 (R)	6.3	6.2	85.8	26.8	26.7	102.4	10.9	10.4	116.0
S1	5.8	6.1	79.6	26.5	27.5	101.0	9.2	9.4	98.4
O2		7.4			26.1			9.7	
S3		7.8			26.0			9.6	
Q3 (R)		6.3			26.3			8.5	
F3 (R)	7.0	6.9	95.4	26.0	25.9	99.1	9.5	9.5	101.6
N4	7.8	7.9	107.1	26.3	26.3	100.1	11.5	10.3	122.4
Y3 (R)	5.9	5.9	81.0	26.5	26.5	101.2	9.0	9.0	96.2
C2 (R)	5.6	5.6	76.9	26.7	26.7	101.9	9.1	9.1	97.3
O3		7.2			26.1			9.6	
I4 (R)	9.0	9.1	123.5	26.2	25.5	99.8	9.7	9.4	103.2
B3	8.5	8.7	116.2	25.7	25.8	98.0	9.3	9.2	99.4
A3 (R)	6.5	6.6	89.2	26.7	26.8	101.8	9.1	9.1	97.3
P1				26.2	26.3	99.8	8.7	8.9	93.0
W4	7.2	7.1	98.1	26.1	26.2	99.6	10.3	10.2	109.6
Z4	7.9	8.0	108.8	25.9	25.9	98.7	10.0	10.1	106.5
X4	6.9		94.7	26.1		99.5	8.3		88.7
CKPG	7.3	7.3	100.4	26.3	26.2	100.1	9.5	9.4	101.8
(R)	7.1			26.5			9.6		

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for NOV-DEC, 1990

26 LB Corrugating Medium

Code	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb./In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	65.5	66.0	107.0		25.5				
Y1 (R)	63.5	63.1	103.7						
J3	65.0	66.0	106.2	42.0	41.8	133.2	14.0	13.3	109.4
D3 (R)	63.1	63.1	103.1	33.0	32.3	104.6			
S2 (R)	61.3	65.2	100.1						
M4	61.9	58.7	101.1	38.1	36.7	120.8	13.7	13.1	107.0
Y2 (R)	61.0	59.3	99.7	29.3	28.1	92.9			
M1	58.8	61.5	96.1	34.0	31.5	107.8	13.0	13.5	101.6
E4 (R)		47.6							
G2	68.0	66.3	111.1				12.2	12.4	95.3
V3		64.0						14.8	
N2		72.3						15.9	
H4	60.0	60.5	98.0	33.0	36.5	104.6	13.5	14.4	105.5
N1	66.4	64.5	108.5					10.8	
L3	61.0	60.8	99.7	30.0	30.1	95.1	10.1	11.5	78.8
D4	58.0	58.7	94.7	30.0	29.8	95.1	12.1	12.5	94.5
H1		60.8			33.0				
C1		62.3							
J2		60.5			32.5				
L1 (R)	60.7	59.6	99.1						
U2 (R)	59.9	60.4	97.8						
S1	61.8	61.6	101.0						
O2		54.5			27.5			13.0	
S3		59.8			29.6			13.6	
Q3 (R)		66.0							
F3 (R)		47.0		25.8	25.6	81.8			
N4	60.0	62.8	98.0	34.0	34.5	107.8	10.6	10.9	82.4
Y3 (R)	58.1	60.4	94.9	22.2	22.7	70.4			
C2 (R)	59.1	59.8	96.5	24.5	23.3	77.7			
O3		58.8			29.5			12.4	
I4 (R)	58.0	58.9	94.7				13.5	12.2	105.1
B3	63.0	62.2	102.9				11.9	11.6	93.0
A3 (R)	63.0	61.6	102.9	33.0	32.2	104.6	12.0	11.8	93.8
P1	60.0	60.7	98.0	35.0	38.7	111.0			
W4	63.9	66.5	104.4	41.5	38.3	131.6			
Z4	63.4	62.3	103.5	33.1	34.2	105.0			
X4	69.0		112.7						
CKPG (R)	62.0 60.8	61.2	101.4	32.4 28.0	31.5	102.8	12.4 12.7	12.8	96.9

Note B is given in the appendix.

Table I

Averages of Mill Quality Data for JUL-AUG, 1990

33 LB Corrugating Medium

Code	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq. Ft.			Caliper Mils		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	9.7	9.7	129.4	32.2	32.3	97.7	11.3	11.7	101.0
Y1 (R)				33.0	33.2	100.1	12.3	11.4	110.0
J3	6.8	7.3	90.7	32.8	33.0	99.3	12.0	12.3	107.3
D3 (R)	8.6	7.5	114.7	33.1	32.8	100.3	11.0	10.8	98.3
S2 (R)	8.4	8.2	112.1	33.3	33.2	101.0	10.4	10.2	93.0
M4	7.1	7.0	94.7	32.9	33.0	99.9	10.8	11.1	96.6
M1	8.1	7.3	108.1	33.2	33.2	100.7	11.5	11.3	102.4
E4 (R)	7.8	7.9	104.6	32.9	33.0	99.9			
G2	7.7	7.2	102.7	33.1	33.1	100.4	11.3	11.0	101.0
V3		6.3			33.0			9.9	
N2		7.0			33.1			9.4	
H4	7.7	7.6	102.7	33.2	33.2	100.8	10.5	10.4	93.9
N1	8.3	8.2	110.7	32.6	32.8	99.0	13.1	12.7	116.9
L3	8.3	8.2	110.1	32.8	32.9	99.6			
J2									
S1	6.0	6.4	80.1	33.3	33.4	101.0	11.9	11.8	106.4
S3	7.8	8.8	104.1	33.0	32.6	100.1	11.8	11.9	105.5
F3 (R)	6.9	6.9	92.1	33.0	33.0	100.1	11.0	11.0	98.3
N4	8.0	7.9	106.7	33.4	33.3	101.2	12.9	12.2	115.3
C2 (R)	5.8	5.8	76.7	33.8	33.9	102.6	11.1	11.4	99.2
O3	7.4	6.9	98.1	33.4	33.3	101.3	11.9	12.0	106.4
B3	8.3	8.7	110.5	32.6	31.0	98.9	11.5	10.9	102.8
A3 (R)	6.9	6.8	92.1	33.1	33.1	100.4	10.6	10.5	94.8
P1				33.0	33.0	100.0	11.1	11.3	99.2
W4	7.2		96.1	33.2		100.8	12.8		114.1
Z4	7.7		103.0	33.0		100.1	11.9		105.9

CKPG	7.6	7.5	101.9	33.1	33.0	100.2	11.5	11.2	103.3
(R)	7.4			33.2			11.1		

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for JUL-AUG, 1990

33 LB Corrugating Medium

Code	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb./In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	77.4	75.9	106.6		45.5				
Y1 (R)				62.1	60.9	111.4			
J3	76.0	77.5	104.6	63.0	62.0	113.0	19.0	17.0	111.5
D3 (R)	76.6		105.5	50.0	50.7	89.7			
S2 (R)	81.4	85.3	112.1						
M4	71.6	71.7	98.6	51.9	55.2	93.1	15.8	16.6	92.8
M1	70.8	73.9	97.5	48.0	51.8	86.1	16.0	18.1	93.9
E4 (R)	69.7	50.7	96.0						
G2	66.0	67.8	90.9				14.9	15.8	87.5
V3		67.0						19.8	
N2		77.0						19.3	
H4	82.0	82.8	112.9	59.0	55.8	105.8	19.5	19.0	114.5
N1	82.1	74.7	113.0	58.2	59.3	104.5	13.7	14.1	80.1
L3	71.0	71.6	97.8	49.0	44.9	87.9	19.5		114.2
J2									
S1							17.2	17.9	101.0
S3	72.0	73.7	99.1		47.4		18.8	17.5	110.1
F3 (R)	76.2	45.0	104.9	40.6	40.2	72.8			
N4	70.0	73.7	96.4	57.5	57.3	103.2	14.7	14.8	86.3
C2 (R)	75.8	76.9	104.4	35.4	34.2	63.5			
O3	74.0	74.0	101.9	49.0	46.5	87.9	16.4	17.6	96.5
B3	75.0	76.7	103.3				15.0	14.7	88.1
A3 (R)	78.0	77.0	107.4	56.0	123.7	100.5	17.0	16.3	99.8
P1	81.0	79.8	111.5	57.0	56.5	102.3			
W4	82.3		113.3	61.1		109.7			
Z4	83.3		114.6	57.9		103.8			
CKPG (R)	75.8 76.3	72.6	104.4	53.5 48.8	55.7	95.9	16.7 17.0	17.0	98.2

Note B is given in the appendix.

Table I

Averages of Mill Quality Data for SEPT-OCT 1990

33 LB Corrugating Medium

Code	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq. Ft.			Caliper Mils		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	9.5	9.7	127.5	32.5	32.3	98.5	11.8	11.6	104.3
Y1 (R)				33.6	33.2	101.8	12.1	11.7	107.0
J3	7.3	7.3	98.0	33.0	33.0	99.9	12.1	12.2	107.0
D3 (R)	8.6	8.0	115.5	33.0	32.9	100.0	10.6	10.8	93.7
S2 (R)	8.5	8.3	114.1	33.3	33.3	100.9	10.6	10.3	93.7
M4	7.2	7.0	96.7	32.9	33.0	99.7	10.8	11.0	95.5
M1	7.3	7.4	97.3	33.1	33.2	100.3	11.5	11.4	101.7
E4 (R)		7.9			33.0				
G2	7.7	7.3	103.4	33.1	33.1	100.3	11.3	11.1	99.9
V3		6.3			33.0			9.9	
N2	6.6	7.0	88.6	33.1	33.1	100.3	9.3	9.4	82.2
H4	7.5	7.7	100.7	33.2	33.2	100.6	10.6	10.3	93.7
N1	8.2	8.2	109.4	32.8	32.8	99.4	13.3	12.9	117.6
L3	8.4	6.8	112.1	32.9	32.9	99.6			
J2									
S1	6.3	6.4	84.6	33.3	33.4	100.9	12.0	11.9	106.1
S3	7.8	8.4	105.1	33.0	32.8	99.9	11.7	11.9	103.4
F3 (R)	6.9	6.9	92.6	32.7	33.1	99.1	11.0	11.0	97.2
N4	7.9	8.0	106.1	33.2	33.3	100.7	13.7	12.3	120.7
C2 (R)	5.8	5.7	77.9	33.8	33.9	102.5	11.2	11.4	99.0
O3	7.3	7.0	98.4	33.1	33.4	100.2	11.7	11.9	103.4
B3	8.2	8.5	110.0	32.5	31.1	98.6	11.5	11.0	101.7
A3 (R)	6.8	6.8	91.3	33.1	33.1	100.3	10.7	10.5	94.6
P1				33.0	33.0	99.9	10.8	11.2	95.5
W4	7.6	7.2	102.6	33.1	33.2	100.2	13.4	12.8	118.8
Z4	8.0	7.7	107.1	32.8	33.0	99.3	12.2	11.9	107.9

CKPG	7.6	7.4	101.9	33.0	33.0	100.1	11.5	11.3	102.0
(R)	7.3			33.3			11.0		

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for SEPT-OCT 1990

33 LB Corrugating Medium

Code	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb./In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	76.0	76.4	102.5		44.6				
Y1 (R)				60.7	61.2	107.9			
J3	77.0	77.3	103.8	65.0	62.3	115.5	19.0	17.3	110.6
D3 (R)	77.4	76.6	104.4	54.0	51.0	95.9			
S2 (R)	81.3	84.6	109.6						
M4	69.1	71.5	93.2	54.1	55.2	96.1	16.2	16.6	94.3
M1	72.6	73.5	97.9	52.0	50.5	92.4	16.5	17.7	96.0
E4 (R)		55.4							
G2	67.0	67.5	90.3				15.1	15.6	87.9
V3		67.0						19.8	
N2	77.0	77.0	103.8				19.4	19.3	112.9
H4	79.0	82.7	106.5	53.0	56.5	94.2	18.3	19.1	106.5
N1	78.5	76.5	105.8	59.0	58.9	104.7		14.0	
L3	71.0	71.2	95.7	48.5	46.6	86.2	15.8	19.5	91.8
J2									
S1							17.5	17.8	101.8
S3	72.0	73.2	97.1		47.2		18.5	17.8	107.5
F3 (R)	77.3	52.8	104.2	38.8	40.2	68.9			
N4	68.5	73.3	92.4	55.5	57.4	98.6	13.8	14.8	80.0
C2 (R)	76.8	76.8	103.5	33.7	34.6	59.9			
O3	74.0	74.0	99.8	44.5	47.1	79.1	16.2	17.3	94.2
B3	76.0	76.2	102.5				15.1	14.7	87.9
A3 (R)	77.0	77.3	103.7	53.8	124.5	95.6	16.6	16.4	96.6
P1	80.0	79.5	107.9	55.0	56.3	97.7			
W4	78.5	82.3	105.8	60.9	61.1	108.3			
Z4	83.7	83.3	112.8	59.7	57.9	106.1			

CKPG	75.7	74.2	102.1	53.0	56.3	94.2	16.8	17.2	97.5
(R)	78.0			48.2			16.6		

Note B is given in the appendix.

Table I

Averages of Mill Quality Data for NOV-DEC, 1990

33 LB Corrugating Medium

Code	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq. Ft.			Caliper Mils		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	9.5	9.6	126.4	32.3	32.4	97.9	11.7	11.6	103.1
Y1 (R)				33.0	33.3	100.0	12.0	11.7	105.7
J3	7.2	7.3	95.8	33.0	33.0	100.1	12.5	12.2	110.1
D3 (R)	8.7	8.4	115.8	33.0	33.0	100.0	10.4	10.8	91.6
S2 (R)	8.4	8.4	111.8	33.6	33.3	101.9	10.7	10.2	94.3
M4	6.8	7.0	90.5	33.0	33.0	99.9	10.4	11.0	91.6
M1	7.3	7.4	97.1	33.0	33.2	100.0	11.1	11.4	97.8
E4 (R)		7.9			33.0				
G2	7.5	7.4	99.8	33.1	33.1	100.3	10.9	11.1	96.0
V3		6.3			33.0			9.9	
N2		6.6			33.1			9.4	
H4	7.6	7.6	101.1	33.3	33.2	100.8	10.2	10.3	89.8
N1	8.2	8.2	109.5	32.8	32.8	99.4	14.0	13.0	123.6
L3	8.4	8.2	111.1	32.8	32.9	99.4			
J2									
S1	6.2	6.4	82.5	33.4	33.4	101.2	11.7	12.0	103.1
S3		8.1			32.9			11.9	
F3 (R)	7.0	6.9	93.1	33.1	33.0	100.3	11.0	11.0	96.9
N4	8.0	7.9	105.8	33.0	33.3	100.2	13.7	12.5	120.2
C2 (R)	5.5	5.7	73.2	33.9	33.9	102.8	11.3	11.3	99.5
O3	7.2	7.0	95.8	33.2	33.3	100.7	12.0	11.9	105.7
B3	8.1	8.4	107.9	32.7	31.1	99.2	11.6	11.2	102.2
A3 (R)	6.8	6.8	90.5	33.1	33.1	100.3	10.8	10.6	95.1
P1				33.0	32.9	99.9	10.7	11.1	94.3
W4	7.5	7.4	99.8	33.2	33.1	100.5	13.1	13.1	115.4
Z4	8.0	7.9	106.5	32.7	32.9	99.2	12.2	12.0	107.5
X4	6.9		91.8	33.1		100.3	10.6		93.4

CKPG	7.5	7.5	100.3	33.1	33.0	100.2	11.6	11.4	101.8
(R)	7.3			33.3			11.0		

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for NOV-DEC, 1990

33 LB Corrugating Medium

Code	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb./In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
I3	76.3	76.6	102.8		41.2				
Y1 (R)				62.0	62.6	118.9			
J3	77.0	77.2	103.7	66.0	62.7	126.6	18.0	17.7	105.8
D3 (R)	78.2	77.0	105.4	56.0	52.3	107.4			
S2 (R)	82.1	83.6	110.6						
M4	73.4	71.0	98.9	54.7	55.3	104.9	17.8	16.5	104.6
M1	73.2	73.4	98.6	56.0	50.9	107.4	17.0	17.3	99.9
E4 (R)		55.4							
G2	67.0	67.5	90.3				15.4	15.5	90.5
V3		67.0						19.8	
N2		77.0						19.4	
H4	80.0	81.8	107.8	53.0	56.3	101.7	18.3	19.1	107.5
N1	73.6	77.4	99.1	59.9	58.9	114.9		14.0	
L3	69.0	71.0	93.0	48.0	47.1	92.1	13.8	17.6	81.3
J2									
S1							17.8	17.7	104.6
S3		72.7			42.8			18.0	
F3 (R)		57.7		40.1	40.3	76.9			
N4	68.0	73.2	91.6	57.0	56.8	109.3	14.2	14.5	83.4
C2 (R)	76.1	76.8	102.5	35.8	34.8	68.7			
O3	72.0	74.0	97.0	48.0	46.6	92.1	16.1	17.1	94.4
B3	77.0	76.2	103.7				15.3	14.7	89.9
A3 (R)	79.0	77.2	106.4	54.0	53.6	103.6	16.6	16.6	97.5
P1	79.0	79.7	106.4	51.0	56.5	97.8			
W4	74.6	80.4	100.5	62.1	61.0	119.1			
Z4	83.0	83.5	111.8	58.5	58.8	112.1			
X4	74.0		99.7				19.5		114.6
CKPG (R)	75.4 78.9	74.2	101.6	53.9 49.6	52.1	103.3	16.7 16.6	17.0	97.8

Note B is given in the appendix.

It should be explained that the number of machines for which data are compiled in each table for a specified period varies for these reasons: a machine must have (a) produced at least 500 tons of the pertinent grade weight during the specified period, or (b) produced 500 tons of the pertinent grade weight during ANY ONE OR MORE of the 12 months prior to the specified period (so that a cumulative average is available), to be included in a given table.

TABLE VII
Data on Conditioning and Testing Environments
JUL-AUG, SEPT-OCT, NOV-DEC, 1990

Code	Conditioning Environment				Testing Environment	
	Conditioned Before Testing?	Min.	Temp ^o F	R.H.%	Are Quality Samples Tested Under Controlled Conditions Of Temperature and Humidity?	
C1	NO	--	--	--	NO	
H1	NO	--	--	--	NO	
L1	NO	--	--	--	YES: 72 $\pm 4^{\circ}$ F;	50 ± 5 % RH
M1	NO	--	--	--	YES: 0 $\pm 0^{\circ}$ F;	0 ± 0 % RH
N1	NO	--	--	--	YES: 70 $\pm 2^{\circ}$ F;	50 ± 2 % RH
P1	NO	--	--	--	NO	
S1	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 2 % RH
Y1	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
C2	NO	--	--	--	YES: 70 $\pm 1^{\circ}$ F;	50 ± 2 % RH
G2	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
J2	NO	--	--	--	NO	
N2	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
O2	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 2 % RH
S2	NO	--	--	--	YES: 72 $\pm 1^{\circ}$ F;	50 ± 1 % RH
U2	NO	--	--	--	YES: 72 $\pm 4^{\circ}$ F;	50 ± 5 % RH
Y2	YES	0	0	0	YES: 75 $\pm 2^{\circ}$ F;	50 ± 5 % RH
A3	NO	--	--	--	NO	
B3	NO	--	--	--	YES: 70 $\pm 2^{\circ}$ F;	50 ± 10 % RH
D3	NO	--	--	--	NO	
F3	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 3 % RH
I3	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 2 % RH
J3	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
L3	NO	--	--	--	YES: 0 $\pm 0^{\circ}$ F;	0 ± 0 % RH
O3	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 5 % RH
Q3	NO	--	--	--	NO	
S3	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 2 % RH
V3	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
Y3	NO	--	--	--	YES: 70 $\pm 1^{\circ}$ F;	50 ± 2 % RH
D4	NO	--	--	--	YES: 0 $\pm 0^{\circ}$ F;	0 ± 0 % RH
E4	NO	--	--	--	YES: 72 $\pm 2^{\circ}$ F;	50 ± 5 % RH
H4	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
I4	NO	--	--	--	YES: 72 $\pm 3^{\circ}$ F;	50 ± 2 % RH
M4	NO	--	--	--	YES: 0 $\pm 0^{\circ}$ F;	0 ± 0 % RH
N4	NO	--	--	--	NO	
W4	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
X4	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH
Z4	NO	--	--	--	YES: 73 $\pm 2^{\circ}$ F;	50 ± 2 % RH

APPENDIX

NOTES A, AND B USED IN TABULATIONS OF MILL DATA

Notes A, and B used in the tables of mill data are given below; these notes define the procedure used in calculating adjusted basis weight, machine index, and C.K.P.G. index. It should be stressed that each formula is applicable only to a specific physical property of a specific grade weight of corrugating medium.

NOTE A: Adjusted basis weight (ABW) = reported weight (RBW)
adjusted to moisture content 7.8%:

$$ABW = RBW [(100 - \text{reported moisture content, \%}) / (100 - 7.8)]$$

NOTE B: Machine index (%) =

$$[(\text{current machine average} / \text{cumulative C.K.P.G. average}) * 100]$$

Where Cumulative C.K.P.G. average =

$$[\Sigma \text{CCKPGA's for previous six periods, excluding current CCKPGA} / 6]$$

C.K.P.G. index (%) =

$$[(\text{current C.K.P.G. average} / \text{cumulative C.K.P.G. average}) * 100]$$

Where Current C.K.P.G. average =

$$[\Sigma \text{CMA's for current period for all machines} / \text{number of machines}]$$

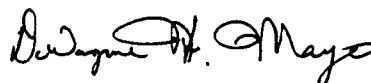
CMA = current machine average for a specific physical property of a specific corrugating medium grade weight obtained during a given period on a specific machine.

CCKPG = current C.K.P.G. average for a specific physical property of a specific corrugating medium grade weight obtained during a given period.

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